FINAL

2004/2005 WORK PLAN









<u>Final</u>

2004/2005 WORK PLAN NEW WORLD MINING DISTRICT RESPONSE AND RESTORATION PROJECT

Prepared for:

USDA Forest Service Northern Region Missoula, Montana

Prepared by:

Maxim Technologies, Inc. 303 Irene Street P.O. Box 4699 Helena, Montana 59604

TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.1	PROJECT BACKGROUND	
1.2	SITE LOCATION AND DESCRIPTION	
1.3	WORK PLAN ORGANIZATION	
2.0	PURPOSE AND OBJECTIVES	7
3.0	SCOPE OF WORK	7
3.1	COMMUNITY RELATIONS	
3.2	MAINTAIN PROJECT WEBSITE AND DATABASE	
3.3	SURFACE WATER QUALITY MONITORING	
3.4	GROUNDWATER MONITORING	
3.5	MCLAREN PIT MOISTURE MONITORING	
3.6 3.7	RECLAMATION MONITORINGNOXIOUS WEED MAPPING	
3.8	GLENGARRY ADIT RESPONSE ACTION CONSTRUCTION	
3.9	FISHER/MILLER CREEK SURFACE CONTROLS CONSTRUCTION	
3.10		
	DESIGN	24
3.11		
3.12		
3.13		
3.14		
3.15 3.16		
3.10		∠9
5.17	DISTRICT	29
3.18		
1.0	PROJECT SCHEDULE	.29
5.0	REPORTS	.30
5.0	REFERENCES	.35
	LICT OF FIGURES	
igur	LIST OF FIGURES	
<u> </u>	<u>s</u> Project Vicinity Map	3
2	2003 Surface Water Monitoring Stations	
3	2003 Groundwater Monitoring Stations	17
1	McLaren Pit Area Monitoring Wells	18
5	McLaren Pit Moisture Monitoring Tube Locations	25
Ò	Project Schedule	31

TABLE OF CONTENTS (continued)

LIST OF TABLES

<u>ı ab</u>	<u>oie</u>	
1	Community Relations Activities	8
2	2004 Surface Water Sample Sites	10
3	Surface Water Field Parameters	13
4	Surface Water Sampling Requirements	13
5	Surface Water Analytical Requirements	14
6	2004 Adit Discharges	16
7	McLaren Pit Area Monitoring Wells Scheduled for Sampling	19
8	Other District Monitoring Wells to be Sampled in July	20
9	Groundwater Field Parameters	21
10	Groundwater Sampling Requirements	21
11	Groundwater Analytical Requirements	22
12	Project Document List	3.3

1.0 INTRODUCTION

This document provides descriptions of work tasks to be completed during 2004/2005 in conjunction with response and restoration activities for the New World Mining District Response and Restoration Project in Park County, Montana (Figure 1). The 2004/2005 Work Plan complements the Overall Project Work Plan (Maxim, 1999a) by providing a description of specific work elements that will be completed in 2004/2005. This work plan initiates the project cycle for the sixth year of the project. Project activities conducted by the U.S. Department of Agriculture Forest Service (USDA-FS) began in 1999. Those activities are described in the 1999, 2000, 2001, 2002/2003, and 2003/2004 Work Plans (Maxim, 1999b; 2000; 2001a; 2002a; 2003a).

This year's work plan for the project crosses over into 2005 and is designated the 2004/2005 Work Plan. This was done because, given the short summer field and construction season in the New World District, it was determined that planning and work years were more useful when designated from the beginning of a field or construction season through the next twelve months, rather than on a calendar year basis. In turn, work can be conducted in the summer, with results being interpreted and reports of results being prepared through the fall and winter months. This is followed by finalizing plans for the next year's field or construction season in the spring.

A general description of the site, project objectives, and project organization are provided in this introductory section. More detailed descriptions of the project are described in the Overall Project Work Plan (Maxim, 1999a), and three project summaries (Project Summary 2001(Maxim, 2001b), Project Summary 2002 (Maxim, 2002b), and Project Summary 2003 (Maxim, 2003b), which are available on the project website *(http://www.fs.fed.us/r1/gallatin)* and at the three project information repositories located at the Gallatin National Forest Supervisor's Office in Bozeman, Montana; the Gardiner Ranger District Office in Gardiner, Montana; and at the Cooke City Chamber of Commerce office in Cooke City, Montana. The reader is encouraged to review these documents to gain a better understanding of the overall project.

1.1 PROJECT BACKGROUND

On August 12, 1996, the United States signed a Settlement Agreement (Agreement) with Crown Butte Mining, Inc. (CBMI) to purchase CBMI's interest in their New World Mining District (District) holdings. This transfer of property to the U.S. government effectively ended CBMI's proposed mine development plans and provided \$22.5 million to cleanup historic mining impacts in the District. In June 1998, all interested parties and CBMI signed a Consent Decree (Decree). The Decree, approved by the United States District Court, finalized the terms of the Agreement and made available the funds that are being used for mine cleanup. Monies available for cleanup will be spent first on District Property, which, as defined in the Decree, includes all property or interests in property that CBMI relinquished to the United States (**Figure 1**). As funds are available after District Property is cleaned up to the satisfaction of the United States, other mining disturbances in the District may be addressed.

The USDA-FS, as the lead agency responsible for implementing the cleanup, has assembled a management team and has published objectives to guide reclamation and restoration of the historic mining impacts in the District. Under their Superfund authority, the USDA-FS will execute the response and restoration project by following guidance provided by the EPA for non-time-critical removal actions (EPA, 1993). Non-time-critical removal actions are defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) as actions that are implemented by the lead agency to respond to

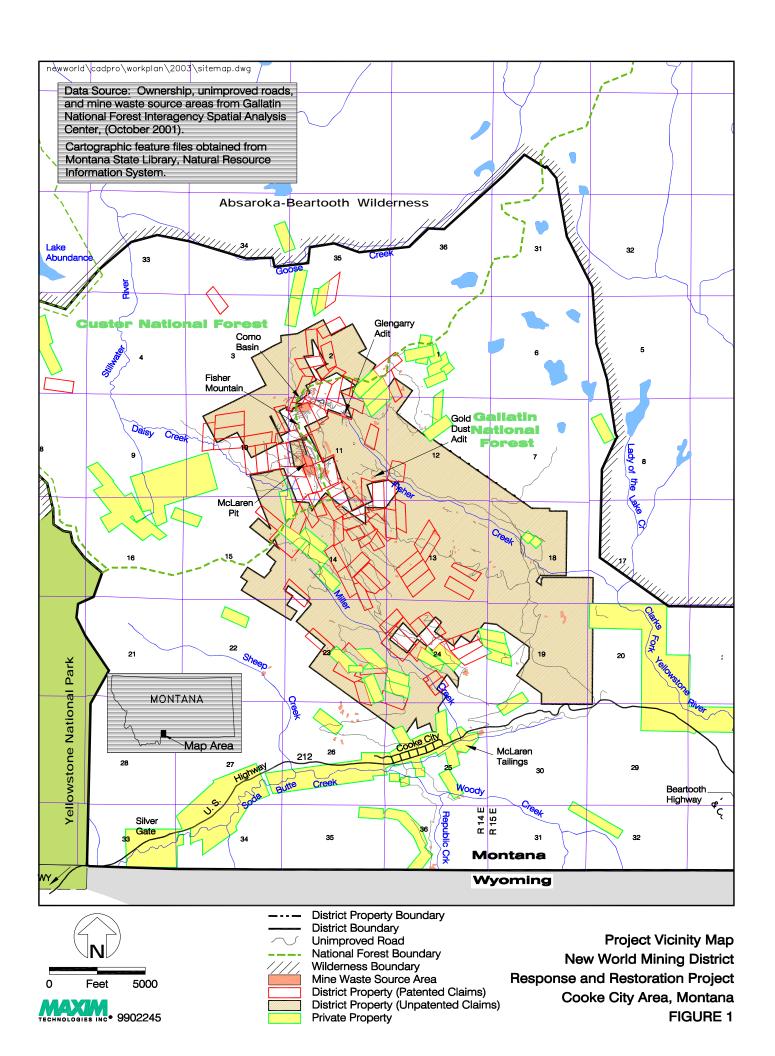
"the cleanup or removal of released hazardous substances from the environment ... as may be necessary to prevent, minimize, or mitigate damage to the public health or welfare or to the environment..." (EPA, 1993). Non-time critical removal actions respond to releases that can start six months after the determination that a response is necessary.

In 1995, EPA began a site investigation after initial announcement of the property transfer from CBMI. The EPA investigation involved installation of monitoring wells, surface water sampling, groundwater monitoring, and completion of a groundwater tracer study. In October 1998, the USDA-FS assisted CBMI in completing and submitting a Support Document and Implementation Plan to support the CBMI petition for temporary modification of water quality standards. Under the Decree and Agreement, CBMI is required to submit petitions regarding temporary standards if requested by the USDA-FS. The Support Document and Implementation Plan (Stanley and Maxim, 1998) were submitted to the State of Montana Board of Environmental Review (Board) on January 22, 1999. The petition for the adoption of temporary standards for Fisher Creek, Daisy Creek, and a portion of the upper Stillwater River was accepted by the Board and noticed for public hearing. The proposed rule was modified to reflect public comment and the temporary water quality standards were approved and adopted by the Board on June 4, 1999. The goal of the temporary standards is to allow the project to proceed so that water quality in Fisher Creek, Daisy Creek, and the Stillwater River improves to the point where these streams meet uses for waters classified B-1 under classification standards established by the State of Montana.

The temporary standards are subject to change as improvements in water quality are realized. They are reviewed every three years to determine if changes are desirable, and the first review was required in 2002. The Board of Environmental Review held a meeting on July 26, 2002, to review the long-term water quality data collected since the standards became effective in June 1999, and compared project progress with that presented in the implementation plan (Maxim, 2002c). As a result of this review, the Board took no action to modify the temporary standards as originally defined in June 1999.

In March 1999, the USDA-FS initiated the planning process for the project. Planning documents were in place in June 1999, and work began on the project with the monitoring of surface water and groundwater quality at selected monitoring points. In March 2000, June 2001, July 2002, and May 2003, the USDA-FS finalized the 2000, 2001, 2002/2003, and 2003/2004 Work Plans, respectively, that detailed work to be conducted in the second, third, fourth, and fifth years of the project. Activities that have been conducted to date include the following:

- Establishing a database management system for the project.
- Cataloging existing information available for the site.
- Completing a technical evaluation of existing information and data.
- Improving portions of the Daisy Pass and Lulu Pass roads to accommodate construction traffic.
- Improving a previously constructed surface water diversion around the Como Shaft.
- Developing a suitable map base of District Property to support engineering design.
- Evaluating areas of erosion contributing excessive sediment to area drainages.
- Completing a repository siting evaluation report and collecting hydrogeologic data on two prospective repository sites.
- Completing a surface water tracer study by the U.S. Geological Survey on Daisy Creek and Miller Creek to determine surface water inputs of metal contaminants.



Obtaining data to fill identified data gaps for proposed response actions at the site.

- Identifying unrecorded mine waste dumps, adits, and boreholes, and developing a database of site characteristics.
- Geochemical sampling of mine wastes throughout the district.
- Ranking mine waste sources according to a modified Hazard Ranking System to aid in the prioritization of sites slated for clean up.
- Identifying unrecorded cultural features.
- Reopening the Glengarry Adit and Como Raise to more fully characterize underground sources of water within the mine.
- Evaluating water quality treatment alternatives for acid mine discharges.
- Preparing a Selective Source Response Action Engineering Evaluation/Cost Analysis (EE/CA) for potential response alternatives.
- Removing approximately 25,000 cubic meters (32,700 cubic yards) of mine waste rock and mill tailings (nine percent of the total District waste) from seven mine waste areas, disposing of these wastes in an engineered repository, and revegetating about 1.9 hectares (4.6 acres) of the former waste areas for the Selective Source Response Action.
- Preparing a McLaren Pit Response Action EE/CA (Maxim, 2001c).
- Consolidating and capping waste rock dumps from the Daisy Creek headwaters area into the McLaren Pit. These waste source areas account for about 67% of the District's total waste rock volume on public lands. Construction activities were initiated in 2002 with the consolidation of the wastes, and concluded with capping the consolidated wastes with an impermeable liner in 2003.
- Satisfying the requirements of the petition for temporary standards submitted by CBMI.
- Preparing a report for the Board of Environmental Review with respect to their review of the temporary water quality standards.
- Preparing a Como Basin/Glengarry Adit/Fisher Creek Response Action EE/CA (Maxim, 2002d).
- Preparing a design package including engineering drawings and specifications for closure of the Glengarry Adit, where contaminated outflows from the mine flow into Fisher Creek. Clean-up goals for the Glengarry Mine are based on eliminating or minimizing contaminated inflows and outflows from the mine. The Glengarry adit source area reclamation work was initiated in 2003 with the grouting of the Como Raise and 1050 roof leak. Phase II of closure will be completed in 2004 with the construction of tunnel plugs and backfills.
- Installing shallow monitoring wells downgradient of the McLaren Pit.
- Installing shallow monitoring wells in the Como Basin.
- Plugging and abandoning historic monitoring wells in the McLaren Pit.
- Reopening and evaluating the McLaren Adit, and grouting an exploration boring that intersected the adit tunnel.
- Preparing the Miller Creek Response Action EE/CA (Maxim, 2004).

1.2 SITE LOCATION AND DESCRIPTION

The District falls within the Gallatin and Custer National Forests, and abuts Yellowstone National Park's northeast corner. The Absaroka-Beartooth Wilderness Area bounds the District to the north and east. The Montana-Wyoming state line forms the southern boundary of the District. The District lies entirely within Park County, Montana (**Figure 1**).

The communities of Cooke City and Silver Gate, Montana are the only population centers near the District. The neighboring communities of Mammoth, Wyoming and Gardiner, Montana are located about 80 kilometers (50 miles) to the west. Red Lodge, Montana is located about 105 kilometers (65 miles) to the northeast via the Beartooth Highway, and Cody, Wyoming is located 95 kilometers (60 miles) to the southeast.

The District is located at an elevation that ranges from 2,400 meters (7,900 feet) to over 3,170 meters (10,400 feet) above sea level. The site is snow-covered for much of the year and only one route of travel is open on a year-round basis -- the highway between Mammoth and Cooke City. The Sunlight Basin road accesses the District from northwestern Wyoming during the spring, summer and fall but only allows access to within a few miles of the District in winter. The Beartooth Highway is closed during winter, as is Highway 212 from Cooke City eastward to Pilot Creek near the Montana/Wyoming state line.

The District covers an area of about 10,360 hectares (25,600 acres). Historic mining disturbances affect about 20 hectares (50 acres) located on District Property. Mining disturbances on non-District Property include the McLaren Tailings and McLaren Mill Site, which cover an additional 6.9 hectares (17 acres), as well as the Great Republic Smelter, which is a relatively small site (0.2 hectares; 0.5 acres) compared to the McLaren Tailings.

The topography of the District is mountainous with dominant glacial features, and is situated at the headwaters of three river systems that all flow into the Yellowstone River. The three tributaries are the Clark's Fork of the Yellowstone, the Stillwater, and the Lamar. The Lamar River flows through Yellowstone Park. The major tributary streams in the District include Daisy, Miller, Fisher, Goose, Sheep, Lady of the Lake, Republic, Woody, and Soda Butte creeks.

1.3 WORK PLAN ORGANIZATION

This work plan is organized into several sections. Following this introductory section is a description of the purpose and objectives for the work plan (Section 2.0). Section 3.0 describes work tasks that will be completed during 2004/2005. The project schedule for 2004/2005 and project deliverables are presented in Sections 4.0 and 5.0, respectively.

2.0 PURPOSE AND OBJECTIVES

The primary purpose of the 2004/2005 Work Plan is to guide project activities that are directed toward completing response and restoration actions to mitigate impacts or the threat of impacts resulting from historic mining activities in the District. Objectives for the 2004/2005 Work Plan are consistent with those detailed in the Overall Project Work Plan (Maxim, 1999a) and those described in the Revised Support Document and Implementation Plan for Temporary Water Quality Standards (Maxim, 2003c). Primary objectives for work done in 2004/2005 include: conducting response actions; preparing response action construction packages; collecting sufficient information to support engineering analyses and designs for response actions; measuring water quality, vegetation success, and erosion parameters to document the results of response and restoration actions; and, satisfying requirements of the rule allowing adoption of temporary water quality standards.

3.0 SCOPE OF WORK

To meet the objectives for 2004/2005, the following activities will be performed:

- Maintain community relations in accordance with the Community Relations Plan (Maxim, 1999c).
- Maintain the project database and the project website.
- Continue long-term monitoring of surface water in accordance with the Long-Term Surface Water Quality Monitoring Plan (Maxim, 1999d).
- Monitor water quality in stream reaches below the Glengarry Adit construction area.
- Monitor groundwater at selected locations.
- Monitor the repository sump and associated surface water and groundwater locations.
- Monitor germination success and cover at the McLaren Pit and McLaren Triangle.
- Map the occurance of weeds on reclaimed areas and implement weed control measures if necessary.
- Monitor McLaren Pit moisture tubes.
- Complete Phase II construction for the Glengarry Adit Response Action.
- Implement and complete the Fisher/Miller Creek Surface Controls Construction.
- Complete Response Action construction packages for the preferred cleanup alternatives for the Como Basin, remaining work in the Fisher Creek drainage, and cleanup work identified for Miller Creek.
- Prepare an Adit Discharge Response Action EE/CA for remaining adit discharges in the District.
- Grout specific exploration boreholes in the Gold Dust Adit to prepare for portal closure in 2005.
- Characterize the Distribution of Sediment in Fisher and Daisy Creek
- Ferricrete Study
- Grizzly Bear Study
- Stillwater Wetland Thesis
- Initiate the process to list the District on the National Register of Historic Places

- Prepare the 2004 Project Summary
- Prepare the 2005/2006 Work Plan

A more complete description of each of these activities is presented below.

3.1 COMMUNITY RELATIONS

A Community Relations Plan (CRP) has been developed for the project and is included in the Overall Work Plan (Maxim, 1999c). The CRP describes community relation strategies that will be used to share information with the public and obtain timely input on proposed project activities. Community relation techniques include preparing news releases, preparing fact sheets, conducting technical workshops and public meetings, making project documents readily available to interested parties, and accepting and responding to public comment on project documents.

Community relation activities described in the CRP will be used in 2004/2005 to keep the public informed of project activities. Events expected for 2004/2005 with the anticipated timing of the events are listed in **Table 1**. As other events arise during the year, the public will be informed in a timely manner in accordance with the CRP. If necessary, the CRP will be modified to insure all interested citizens are kept informed of project activities and are afforded ample opportunities to provide input to the response and restoration process.

TABLE 1 COMMUNITY RELATION ACTIVITIES 2004/2005 Work Plan			
Event/Task	Timing		
Release Updated Project Summary Report	June 2004		
Public Meeting	June/July 2004 - Cooke City		
Public Meeting	August/September 2004 - Cooke City		
Technical Workshop on Work Plan Activities	January 2005 – Bozeman		

3.2 MAINTAIN PROJECT WEBSITE AND DATABASE

The USDA Forest Service has maintained a project website since project inception. The website address is:

http://www.fs.fed.us/r1/gallatin

The project website contains general information on the project as well as a library of archived information specific to the work that has been conducted over the past five years. The library contains downloadable versions of all documents that have been released to the public for review as well as important maps and graphics. A page on current activities lists the time and place of project meetings. Project information stored at the New World Response and Restoration Project document repository

in Bozeman is also listed on the website. Environmental data that has been collected at the New World site is cataloged in a Microsoft Access® database, and analytical data for surface water and mine waste samples collected since 1989 are available for downloading from this database.

The project website will be maintained to disseminate information, reports, and data related to the project. Relevant reports prepared during 2004/2005 will be posted to the website after the hard copy documents are released to the public. Other reports, such as technical memoranda, which may not be released to the public in hard copy, will also be available on the project website. The project water quality database will continue to be updated as new project information is collected during 2004/2005.

3.3 SURFACE WATER QUALITY MONITORING

3.3.1 Long-Term Surface Water Quality Monitoring

Surface water quality monitoring will be conducted in 2004 at the 12 sampling stations identified in the Long-Term Surface Water Quality Monitoring Plan (Maxim, 1999d). Long-term surface water sampling sites are shown on **Figure 2** and listed in **Table 2** Samples will be collected before the onset of snowmelt (April), before construction begins during higher flow conditions (June/July), and during low flow (September/October).

Surface water samples will be collected and analyzed in accordance with procedures and methods described in the Site-Wide Sampling and Analysis Plan (SAP) (Maxim, 1999f), with the addition that sample station SW-7 on the Stillwater River will be analyzed for both total and dissolved metals. **Table 3** lists surface water field parameters and standard operating procedures from the Ste-Wide SAP. **Table 4** lists preservation and bottle requirements and **Table 5** lists surface water analytical requirements.

3.3.2 Construction Monitoring

Surface water quality monitoring will also be performed during response action construction in 2004. Monitoring will be conducted during construction at two sites upstream of the Glengarry Adit (FCT-11 and FCT-12) and at two sites downstream of the Glengarry Adit (the second settling pond outlet (SPO) and SW-3) during underground and surface reclamation activities (**Figure 2**).

Field personnel will visually monitor surface water adjacent to construction sites regularly for turbidity. Water quality samples will be collected at construction monitoring stations on a daily basis in Fisher Creek when construction work is active in the Glengarry workings. The objective of construction water quality monitoring is to document water quality conditions and make appropriate adjustments to construction practices if water quality is significantly affected by construction activities. The following field parameters will be measured:

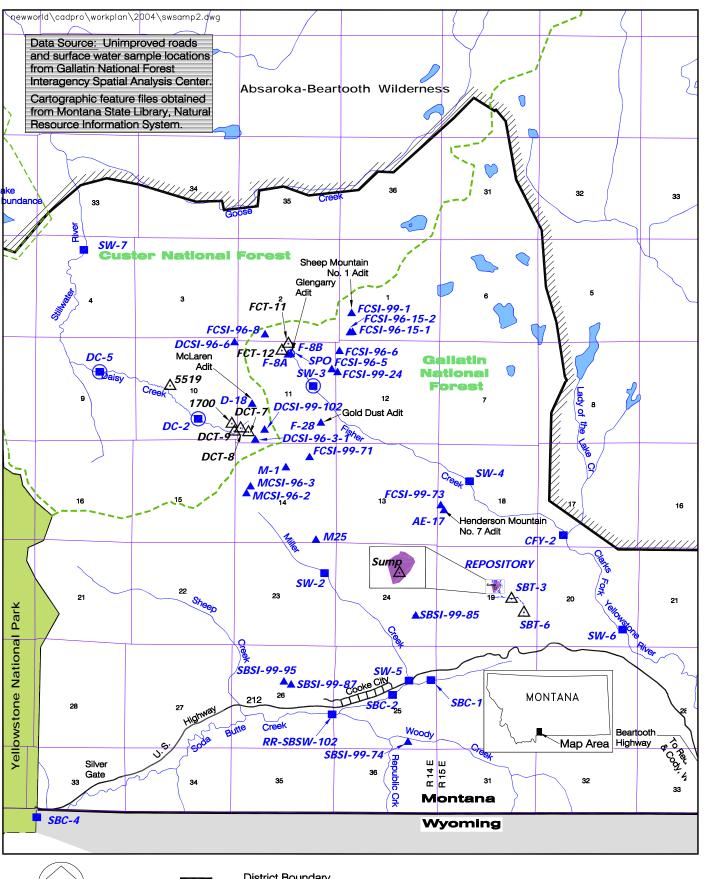
- pH, specific conductance, and turbidity
- Hach total iron concentration
- Hach total copper concentration

Field parameters will be measured according to procedures and methods described in the Site-Wide SAP (Maxim, 1999f). Depending on the results of field measurements, selected samples will be split and analyzed at an analytical laboratory for parameters listed in the Site-Wide SAP. **Table 3** lists the SOPs

TABLE 2 2004 SURFACE WATER SAMPLE SITES 2004/2005 Work Plan									
Site Name Location April June/ July August Sept/ Con Oct uct									
	Daisy Creek Drainage								
DCT-7*	Daisy Cr. tributary south of McLaren Pit		Х	Х	Χ				
DCT-8*	Daisy Cr. tributary south of McLaren Pit		Х	Х	Х				
DCT-9*	Daisy Cr. tributary south of McLaren Pit		Х	Х	Х				
USGS-1700*	Daisy Cr. tributary south of McLaren Pit		Х	Х	Х				
USGS-5519*	Daisy Cr. tributary west of McLaren pit		Х	Х	Х				
Cover Drains*	McLaren Pit benches (three drains)		Х	Х	Х				
DC-2	Daisy Creek below confluence of McLaren tributaries	Х	Х	Х	Х				
DC-5	Daisy Creek above confluence with Stillwater River	Х	Х	X	Х				
SW-7**	Stillwater River at Stillwater Trail Crossing	Х	Х		Х				
	Fisher Creek Drainag	je							
FCT-12	Tributary south of Glengarry Adit		Х		Х	Х			
FCT-11	Tributary below Como Basin		Х		Х	Х			
SPO	Glengarry Settling Pond Outlet					Х			
SW-3	Fisher Creek below Glengarry Adit	Х	Х		Х	Х			
SW-4	Fisher Creek at Lulu Road Crossing	Х	Х		Х				
CFY-2	Fisher Creek above Clarks Fork confluence	Х	Х		Х				
	Clarks Fork River Drain	age							
SW-6	Clarks Fork Yellowstone River at Saw Mill Road	Х	Х		Х				
	Miller Creek Drainag	е							
SW-2	Miller Creek below Miller Mountain Road Crossing	Х	Х		Х				
SW-5	Miller Creek near mouth	х	Х		Х				
Soda Butte Creek Drainage									
SBT-3*	Soda Butte Creek Tributary below Repository Site	Х	Х						
SBT-6*	Soda Butte Creek Tributary below Repository Site	х	Х		Х				
SBC-1	Soda Butte Creek above confluence with Miller Creek	Х	Х		Х				
SBC-2	Soda Butte Creek below McLaren Tailings	Х	Х		Х				
RR-SBSW-102	Soda Butte Creek below Woody Creek	Х	Х		Х				
SBC-4	Soda Butte Creek at Park Boundary	Х	Х		Х				

Note:

Indicates supplemental surface water monitoring station
All stations will be sampled and analyzed for the full suite of laboratory parameters except for construction sampling;
Construction samples will be analyzed for field parameters and total copper and iron.
Indicates sample will be analyzed for both total and dissolved metals.





District Boundary Unimproved Road National Forest Boundary Wilderness Boundary Adit Sampling Station

2004 Surface Water Monitoring Stations **New World Mining District** Long-Term Surface Water Monitoring Station Response and Restoration Project Cooke City Area, Montana Construction Monitoring Station FIGURE 2 Supplemental Monitoring Station

TABLE 3 SURFACE WATER FIELD PARAMETERS 2004/2005 Work Plan					
Parameter	SOP Number ⁽¹⁾	SOP Title	Event		
Specific Conductance	SOP-05	Field Measurement of Specific Conductance	All		
рН	SOP-06	Field Measurement of pH	All		
Water Temperature	SOP-07	Field Measurement of Water Temperature	All		
Flow	SOP-01	Streamflow Measurement; Wading Technique	All		
Turbidity	SOP-35	Field Measurement of Turbidity	Construction		
Total Iron	Hach ⁽²⁾	Hach Water Analysis Handbook	Construction		
Total Copper	Hach ⁽²⁾	Hach Water Analysis Handbook	Construction		

- Maxim Standard Operating Procedures (Appendix A, Site-Wide SAP) Field analysis will be conducted using a Hach DR 2000 Spectrophotometer following the procedures in Hach Water Analysis Handbook (1991)

TABLE 4 SURFACE WATER SAMPLING REQUIREMENTS 2004/2005 Work Plan				
Parameter	Preservation ⁽¹⁾	Bottle Size/Type		
Total Recoverable Metals	HNO3 to pH < 2; Iced to 4°C	500 milliliter polyethylene		
Dissolved Metals	Filtered through 0.45 micron filter; HNO3 to pH < 2; lced to 4°C	500 milliliter polyethylene		
Common Ions/Physicochemical	Iced to 4°C	1 liter polyethylene		

HNO₃ = nitric acid; H2SO4 = sulfuric acid

TABLE 5 SURFACE WATER ANALYTICAL REQUIREMENTS 2004/2005 Work Plan						
Parameter	PQL (mg/L) ⁽¹⁾	EPA Method No.	Max. Holding Time			
	Physicochemic	al	-			
Specific Conductivity	None	2310B	28 days			
рН	None	150.1	Upon arrival at lab			
Total Dissolved Solids	None	2340C	7 days			
Total Suspended Solids	None	160.2	7 days			
Hardness	None	2340B	6 months			
Acidity	None	305.1	14 days			
	Metals ⁽²⁾	_				
Aluminum	0.05	200.8/200.7	6 months			
Cadmium	0.0001	200.8/200.7	6 months			
Copper	0.001	200.8/200.7	6 months			
Iron	0.01	200.8/200.7	6 months			
Lead	0.001	200.8/200.7	6 months			
Manganese	0.003	200.8/200.7	6 months			
Zinc	0.01	200.8/200.7	6 months			
	Common Cation	าร ⁽²⁾				
Calcium	1.0	200.8/200.7	6 months			
Magnesium	1.0	200.8/200.7	6 months			
Potassium	1.0	200.8/200.7	6 months			
Sodium	1.0	200.8/200.7	6 months			
	Common Anior	NS ⁽²⁾	•			
Sulfate	None	375.2	28 Days			
Bicarbonate	None	2320B	14 Days			
Carbonate	None	2320B	14 Days			
Chloride	None	325.3	28 Days			

¹ PQL = Practical Quantitation Limit in milligrams per liter (mg/L)

for construction monitoring parameters, and **Tables 4 and 5** list preservation, bottles, and analytical requirements for sample splits that will be sent to the laboratory.

3.3.3 Supplemental Water Quality Monitoring

Ten supplemental surface water stations will be sampled in 2004 (**Table 2**). Eight stations are located in the Daisy Creek drainage and will be sampled to augment groundwater monitoring in the McLaren Pit area. Two stations in the Soda Butte Creek drainage, SBT-6 and SBT-3, which are downstream of the

² Surface water parameters will be analyzed as total recoverable (unfiltered) except for Station SW-7 (Stillwater River) which will be analyzed for both total and dissolved metals.

repository, will be monitored in conjunction with monitoring of the repository sump. Samples will be collected from all supplemental surface water stations in conjunction with other long-term monitoring events (**Table 2**). Supplemental stations will be sampled and analyzed in accordance with procedures and methods described in the Site-Wide SAP (Maxim, 1999f). **Tables 3, 4, and 5** list field parameters, SOPs, bottles and preservation, and analytical requirements.

3.3.4 Adit Water Quality Monitoring

Drainage from 25 adits in the District was sampled in 2002 and 2003. In 2004, adit discharges will be sampled for field parameters one time during the June/July surface water sampling event to provide additional data to the long-term water quality record from these sites. **Table 6** lists the adits to be sampled and **Table 3** contains the list of field parameters.

At the Gold Dust and McLaren adits, samples will also be collected from the underground workings (**Table 6**). The Gold Dust Adit will be monitored prior to plugging boreholes in the mine workings (see Section 3.10). In addition to measuring field parameters at the McLaren and Gold Dust adit sample stations, samples will be collected for laboratory analysis.

Adit water samples will be collected and analyzed in accordance with procedures and methods described in the Site-Wide SAP (Maxim, 1999f). **Tables 3, 4, and 5** list field parameters, SOPs, bottles and preservation, and analytical requirements.

3.3.5 Selective Source Repository Sump Monitoring

In October 2003, continuous water level monitors were installed in the repository sump and in one monitoring well upgradient and one monitoring well downgradient of the sump. Water levels are measured twice daily by the instruments and stored on a data logger at each location. These data will be used to closely monitor water level in the sump and the adjacent area. Water quality samples will be collected from the sump in April, May, and June. Water quality parameters are listed in **Table 5**.

If the sump fills to capacity with draindown water as it did in 2003, water in the sump will be pumped into appropriate water trucks and disposed at the Cody, Wyoming sewage treatment ponds.

3.4 GROUNDWATER MONITORING

Monitoring wells present on District Property that have historically been monitored for water quality parameters will be monitored once in 2004. This monitoring event is scheduled in July when water levels are typically at seasonal highs. Monitoring will include water level measurement, measurement of field parameters, sampling, and laboratory analysis. **Tables 7 and 8** list monitoring wells targeted for the July 2004 sampling event. **Table 9** lists field parameters that will be measured, and **Tables 10 and 11** list groundwater analytical parameters and practical quantitation limits (PQLs). Well locations are shown on **Figures 3 and 4**.

Supplemental groundwater monitoring will be conducted at the McLaren Pit and Selective Source Repository in 2004. For the McLaren Pit area, the objective of supplemental monitoring is to begin documenting water quality conditions in the pit area following completion of the McLaren Pit capping system (October 2003). McLaren Pit monitoring wells will be supplementally sampled in August and September for field parameters (**Table 7**). As indicated in **Table 7**, six wells will be sampled for a limited suite of analytical parameters (acidity, sulfate, total dissolved solids, and dissolved cadmium, copper, and iron). Well locations are shown on **Figure 4**.

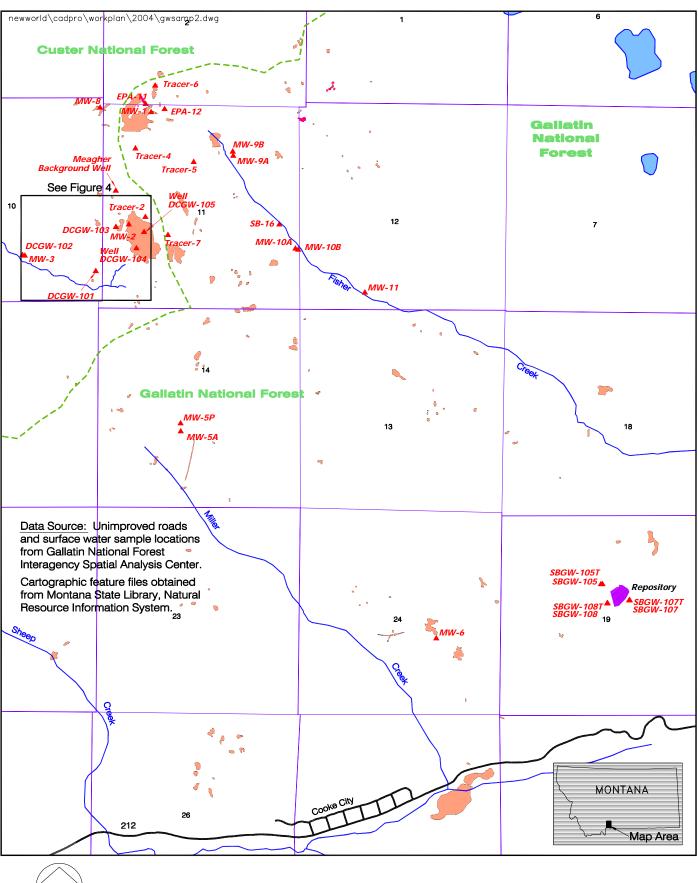
TABLE 6 2004 ADIT DISCHARGE SAMPLE SITES 2004/2005 Work Plan

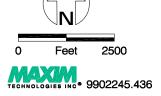
2004/2003 VVOIR I IUII					
Site Name (Site No.)	Adit Sample No.	Location	July 2003 Sample Status		
	F-28	Middle Fisher Creek Valley; portal	X ⁽¹⁾		
Gold Dust Adit (FCSI-96-1A)	F-28-D1	Underground drill station D-1	х		
	F-28-D2	Underground drill station D-2	х		
Glengarry Adit (FCSI-96-2A)	F-8A	Glengarry Mine, base of Lulu Pass	X ⁽²⁾		
Glengarry Mill Site Adit (FCSI-96-4)	F-8B	Glengarry Mine Mill site adit	х		
Upper Tredennic Dump 1 (FCSI-96-15-1)	FCSI-96-15-1	Upper Tredennic basin	Dry		
Upper Tredennic Dump 2 (FCSI-96-15-2)	FCSI-96-15-2	Upper Tredennic basin	х		
Middle Tredennic Dump 1 (FCSI-96-6)	F-11A	Lower Tredennic basin	х		
Lower Tredennic Dump 1 (FCSI-96-5)	F-11	Lower Tredennic Basin	х		
Lower Tredennic Dump 2 (FCSI-99-24)	FCSI-99-24	East of Lower Tredennic	Dry		
Lower Spaulding Dump (FCSI-96-8)	F-1	NE of Lulu Pass	Dry		
Sheep Mountain #1 (NDP) 3 (FCSI-99-1)	FCSI-99-1	Upper Tredennic basin, flank of Sheep Mountain	Х		
Henderson Mountain Dump 10 (FCSF99-71)	FCSI-99-71	Above upper road to Homestake Mine	Dry		
Henderson Mountain Dump 13 (FCSI-99-73)	FCSI-99-73	SE Henderson Mtn, off Henderson Mtn. Rd.	Х		
Henderson Mountain Dump 7 (FCSI-99-68)	AE-17	SE Henderson Mtn, off Henderson Mtn. Rd.	Х		
	D-18	W flank of Fisher Mountain; portal	X ⁽²⁾		
McLaren Adit (DCSI-96-1)	D-18-366	Plugged borehole at 366 feet	Х		
	D-18-423	Caved area at 423 feet	Х		
Near McLaren Pit (DCSI-99-102)	DCSI-99-102	Headwall below county road east of McLaren Pit	Dry		
Daisy Pass Dump 1 (DCSI-96-3-1)	DCSI-96-3-1	Below Daisy Pass	Х		
West of Como Dump 1 (DCSI-96-6)	DCSI-96-6	West side of Lulu pass, Goose Creek	Dry		
Black Warrior Adit (MCSI-96-2)	MCSI-96-2	SE Bull of the Woods Pass, Miller Creek	Х		
Upper Miller Creek Dump (MCSI-96-3)	MCSI-96-3	Near Black Warrior, private land	Х		
Little Daisy Adit (MCSI-96-6)	M-1	SE Daisy Pass, Miller Creek	Х		
Henderson Mtn. Adit	M-25	SW Henderson Mountain, Miller Creek	Х		
Woody Ck. Mine Dump 1 (NDP) (SBSI-99-74)	SBSI-99-74	Woody CK., Mohawk claim, private land	Х		
Alice E. Mill Site seep (NDP) (SBSI-99-85)	AE-6	S Henderson Mountain, Miller Creek	Х		
Soda Butte Dump 8 (NDP) (SBSI-99-87)	SBSI-99-87	Off Miller Mtn. Road, near Cooke City	Х		
Soda Butte Dump 1 (NDP) (SBSI-99-95)	SBSI-99-95	Off Miller Mtn. Road, near Cooke City	Х		

NDP = Notes:

Non-District Property Monitored in July, August, and September 2003 monitored in July and October 2003

(1) (2)







Groundwater Monitoring Location
District Boundary
Unimproved Road
National Forest Boundary
Wilderness Boundary
Mine Waste Source Area

2004 Groundwater Monitoring Stations New World Mining District Response and Restoration Project Cooke City Area, Montana FIGURE 3

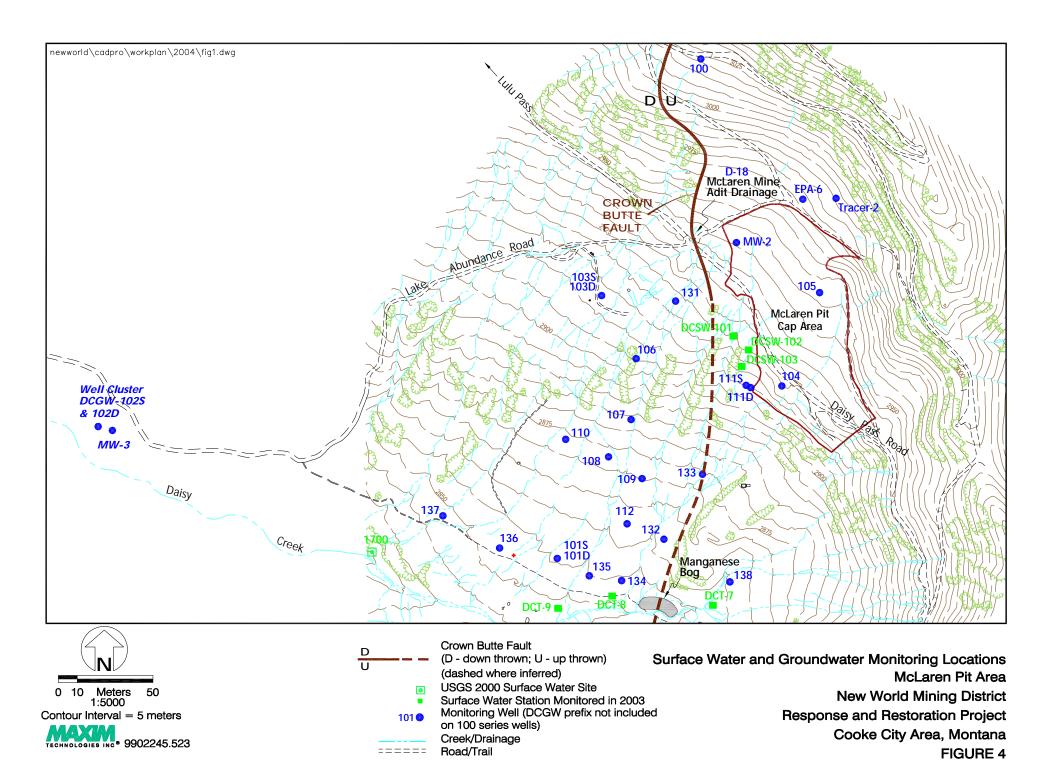


TABLE 7 MCLAREN PIT AREA MONITORING WELLS SCHEDULED FOR SAMPLING 2004/2005 Work Plan

Well No.	Year Installed	Completion Formation	July	August	September
DCGW-100	2003	Meagher Limestone	X*		F
DCGW-101S	2001	Colluvium	X*	L*	L*
DCGW-101D	2001	Lulu Pass Rhyodacite Porphyry	X*	L*	L*
DCGW-111S	2003	Colluvium	X*	L*	L*
DCGW-111D	2003	Bedrock	X*	L*	L*
Tracer-2	1997	Fisher Mtn. Intrusive	X*		
MW-2	1989	Wolsey Shale	X*	F	F
MW-3	1989	Wolsey Shale	X*		
DCGW-104	2001	Waste Rock	X*	L*	L*
DCGW-105	2001	Waste Rock	X*	L*	L*
DCGW-106	2002	Colluvium	F		
DCGW-107	2002	Colluvium	F		
DCGW-108	2002	Colluvium	F		
DCGW-109	2002	Colluvium	F		
DCGW-110	2002	Colluvium	F		
DCGW-131	2002	Colluvium	F		
DCGW-132	2002	Colluvium	X*	L*	L*
DCGW-133	2002	Colluvium	X*	L *	L*
DCGW-134	2002	Colluvium	F		
DCGW-135	2002	Colluvium	F		
DCGW-136	2002	Colluvium	X*	L*	L*
DCGW-137	2002	Colluvium	X*	L*	L*

Notes: X* Indicates well will be sampled for full suite of laboratory parameters along with depth to water and field parameters

F Indicates only depth to water and field parameters monitored

L* Indicates wells to be sampled for limited suite of laboratory parameters (acidity, sulfate, TDS, cadmium, copper, & iron)

⁻⁻ Indicates no monitoring

TABLE 8 OTHER DISTRICT MONITORING WELLS TO BE SAMPLED IN JULY 2004/2005 Work Plan				
Well No.	Year Installed	Completion Formation		
	Fisher Creek	Area		
EPA-11	1996	Tertiary Intrusive Dike		
EPA-12	1996	Scotch Bonnet Diorite		
MW-1	1989	Wolsey Shale		
Tracer-6	1997	Scotch Bonnet Diorite		
MW-9A	1990	Alluvium		
MW-9B	1990	Precambrian		
MW-10A	1990	Alluvium		
MW-10B	1991	Precambrian		
MW-11	1990	Precambrian		
SB-16	1991	Precambrian		
Tracer-5	1997	Fisher Mtn. Intrusive		
	Miller Creek	Area		
MW-5A	1989	Glacial Till/Dolomite		
MW-5P	1989	Wolsey Shale		
MW-6	1989	Flathead Sandstone		
	SB-4B(B) Repo	sitory		
SBGW-105T	1999	Till		
SBGW-105	1999	Granite		
SBGW-107T	1999	Till		
SBGW-107	1999	Granite		
SBGW-108T	1999	Till		
SBGW-108	1999	Granite		

Note: July sampling event involves measuring depth to water and field parameters and collecting samples for laboratory analysis.

TABLE 9 GROUNDWATER FIELD PARAMETERS 2004/2005 Work Plan					
Parameter	SOP Number ⁽¹⁾	SOP Title	Event		
Specific Conductance	SOP-05	Field Measurement of Specific Conductance	All		
рН	SOP-06	Field Measurement of pH	All		
Water Temperature	SOP-07	Field Measurement of Water Temperature	All		
Oxidation-Reduction	SOP-28	Field Measurement of Redox Potential (Eh)	All		
Dissolved Oxygen	SOP-08	Field Measurement of Dissolved Oxygen	All		
Depth to Water	SOP-20	Field Measurement of Groundwater Level	All		

¹ Maxim Standard Operating Procedures (Appendix A, Site-Wide SAP)

TABLE 10 GROUNDWATER SAMPLING REQUIREMENTS 2004/2005 Work Plan				
Parameter	Bottle Size/Type			
Dissolved Metals	Filtered through 0.45 micron filter; HNO3 to pH < 2; Iced to 4°C	500 milliliter polyethylene		
Common Ions/Physicochemical	Iced to 4°C	1 liter polyethylene		

1 HNO₃ = nitric acid

TABLE 11 GROUNDWATER ANALYTICAL REQUIREMENTS 2004/2005 Work Plan			
Parameter	PQL (mg/l) (1)	EPA Method No.	Max. Holding Time
	Physicochemic	al	
Specific Conductivity	None	2310B	28 days
рН	None	150.1	Upon arrival at lab
Total Dissolved Solids	None	2340C	7 days
Hardness	None	2340B	6 months
Acidity	None	305.1	14 days
	Metals ⁽²⁾		
Aluminum	0.05	200.8/200.7	6 months
Cadmium	0.0001	200.8/200.7	6 months
Copper	0.001	200.8/200.7	6 months
Iron	0.01	200.8/200.7	6 months
Lead	0.001	200.8/200.7	6 months
Manganese	0.003	200.8/200.7	6 months
Zinc	0.01	200.8/200.7	6 months
	Common Cation	ns ⁽²⁾	
Calcium	1.0	200.8/200.7	6 months
Magnesium	1.0	200.8/200.7	6 months
Potassium	1.0	200.8/200.7	6 months
Sodium	1.0	200.8/200.7	6 months
	Common Anior	ns ⁽²⁾	
Sulfate	None	375.2	28 Days
Bicarbonate	None	2320B	14 Days
Carbonate	None	2320B	14 Days
Chloride	None	325.3	28 Days

¹ PQL = Practical Quantitation Limit in milligrams per liter (mg/L)

At the Selective Source Repository, water samples will be collected from six monitoring wells in July 2004 in conjunction with long-term groundwater monitoring activities. Wells that will be monitored are listed in **Table 8** and are shown on **Figure 3**.

Water levels will be measured in all monitoring wells immediately before purging the wells. Groundwater samples will be submitted to an analytical laboratory for analysis of parameters listed in **Table 11**. Groundwater monitoring results will be presented in the annual monitoring report.

Maxim Technologies, Inc.® 22 Revision Date: 6-21-04

² Groundwater parameters will be analyzed as dissolved constituents as filtered through a 0.45 micron filter

3.5 MCLAREN PIT MOISTURE MONITORING

In 2003, nine moisture monitoring tubes were installed in the capped pit area (**Figure 5**). These tubes will be monitored using a neutron probe instrument that measures relative moisture content in the wastes beneath the McLaren Pit cap. Measurements made in 2004 will be compared to measurements made in 2003 to determine relative moisture changes in the waste. Moisture monitoring will be conducted in July, August, and September in conjunction with McLaren Pit groundwater monitoring activities.

3.6 RECLAMATION MONITORING

Revegetation in the McLaren Pit and McLaren Triangle will be monitored in 2004 for potential erosion problems and revegetation success. Reclamation monitoring will be conducted in accordance with monitoring procedures that are described in the Long-Term Revegetation Monitoring Plan (Maxim, 1999e). Monitoring will be completed in one event timed to coincide with the period of maximum plant growth. A technical memorandum will be prepared describing the results of revegetation monitoring. The memorandum will contain a summary of field data and recommendations for maintenance, treatment, or future monitoring.

Based on the results of monitoring, the Forest Service may determine that reseeding or refertilization is necessary. Reseeding and refertilization may be carried out in 2004, if necessary. If serious or extensive erosion problems are identified, maintenance may be required, which may include earthwork, drainage control, reseeding, refertilization, and reinstallation of erosion matting. Prescriptions for seeding, fertilization, mulching, and installation of erosion controls would follow the same prescriptions as specified under the original reclamation contract for the McLaren Pit and McLaren Triangle.

3.7 NOXIOUS WEED MAPPING

Noxious weeds will be mapped throughout the District and on reclaimed areas in the District to determine the extent of weed infestation. Reclaimed areas include the following:

- Spalding Middle Dump
- Spalding Access Road
- Spalding Lower Dump
- Small Como Dump
- Upper Tredennic Dump 1
- Upper Tredennic Dump 2
- Middle Tredennic Dump 1
- Lower Tredennic Dump 1
- Rommel Tailings
- Soda Butte Tailings

Noxious weed mapping will be done at each site by mapping ocular estimates of noxious weed cover by species. Following evaluation of weed infestation, weed control practices will be implemented if appropriate. Weed control practices will likely involve, but not be limited to, chemical application of herbicide.

3.8 GLENGARRY ADIT RESPONSE ACTION CONSTRUCTION

Phase II construction of the Glengarry Adit closure will begin in the summer of 2004. Work in 2003 involved preparing the site for construction, installing sediment controls, cleaning muck out of the underground workings, rehabilitating the adit for safety, grouting the Como Raise, and drilling and grouting the 1050 roof leak. Backfilling and plugging of the adit will be completed in 2004. Surface reclamation, including dump removal, regrading, and revegetation, will be completed in 2005 under a separate contract.

To aid in future monitoring of the Glengarry closure, one monitoring well will be installed during construction. This well will be drilled into the portion of the Glengarry tunnel behind (or west of) Plug No. 6, which will be installed just forward (or east of) the Y intersection in the tunnel. This portion of the tunnel will be open following completion of the closure project (i.e. it will not be backfilled). The purpose of the well will be to monitor the level or height that groundwater rises behind the plug. The height that water rises above the tunnel floor will allow observations to be made on several aspects of the closure including the elevation where potential springs may be encountered as a result of plugging the tunnel and the pressure that water will exert on Plug No. 6.

3.9 FISHER/MILLER CREEK SURFACE CONTROLS CONSTRUCTION

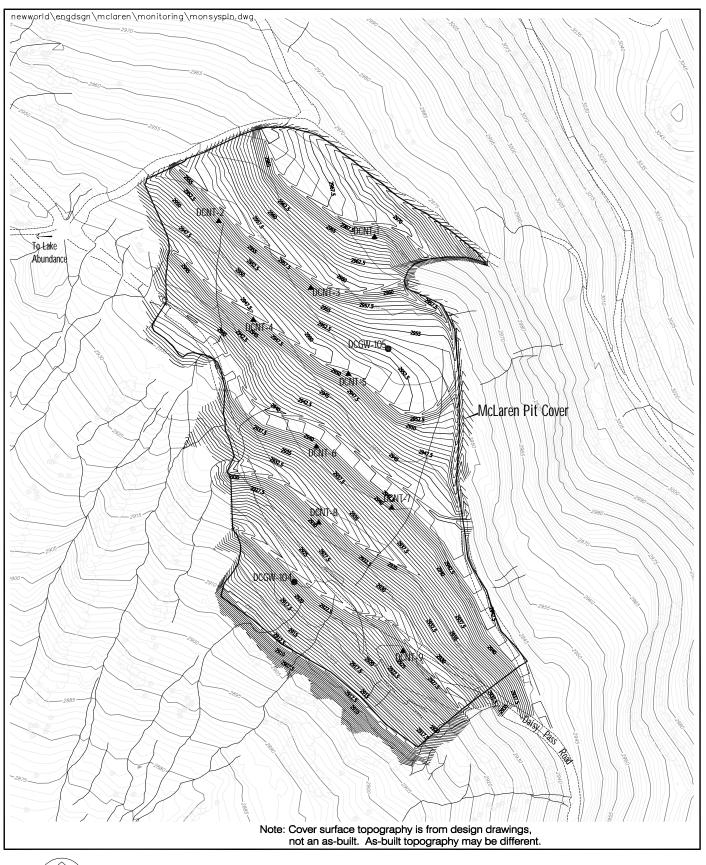
In addition to cleanup construction work that will be conducted at the Glengarry Adit, other cleanup activities will be conducted in 2004 in the Fisher and Miller creek drainages. This work is described in the Como Basin/Glengarry Adit/Fisher Creek Response Action EE/CA and the Miller Creek Response Action EE/CA (Maxim, 2004), and involves implementing surface controls at seven dump sites in Fisher Creek and three dump sites in Miller Creek. Surface controls principally involve moving wastes away from streambanks, reshaping and/or regrading dumps to improve and reroute drainage, mixing a neutralizing amendment into regraded wastes, closing adits, and repairing erosion problems. Work at the Cumberland solid waste dump will also be conducted under this construction project as will backfilling the shaft at the Bull-of-the-Woods site near Crown Butte. Work at the Cumberland solid waste dump involves disposal of non-combustible debris at a licensed landfill.

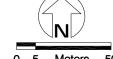
3.10 COMO BASIN AND FISHER AND MILLER CREEK DUMP REMOVAL CONSTRUCTION DESIGN

In accordance with the preferred alterantive selected for the Como Basin (installation of a geomembrane and amended soil capping system) and selected dumps in Fisher Creek and Miller Creek, an engineering design will be completed and a construction bid package prepared in 2004 to enable the Forest Service to solicit bids and initiate construction on these cleanup actions in 2005. The engineering design and construction package will include construction details for the Como Basin capping system, expansion of the Selective Source repository, and removal of the Gold Dust, Glengarry, Black Warrior, and Little Daisy dumps to the repository for disposal. The design is expected to be finalized by midsummer 2004, with evaluation of bids and contracting expected to be completed by spring 2005.

3.11 PREPARE EE/CA FOR DISTRICT-WIDE ADIT DISCHARGES

An EE/CA will be prepared during 2004/2005 that evaluates the impact of remaining adit discharge sources on District Property. This EE/CA will evaluate response options and technologies to mitigate potential impacts from adit seepage that may contribute to water quality degradation. The primary sources of information to make this determination are existing water quality data, various metal loading





0 5 Meters 50 Contour Interval = 1 meter 1:2000 DCNT-1 A
DCGW-01

Nuetron Tube Location Monitoring Well Existing Index Contour Existing Intermediate Contour Index Contour of Cover Surface Intermediate Contour of Cover Surface Neutron Access Tube Locations
McLaren Pit Cover Monitoring System
New World Mining District
Response and Restoration Project
FIGURE 5

studies, and the Abandoned and Inactive Mine Scoring System (AIMSS) ranking for waste sources located throughout the District. A list of adit discharges is presented in **Table 6**.

A preferred alternative will be selected for each of the adit discharges. Key sections of the EE/CA will be similar to those of previously written EE/CAs and will include:

- Executive Summary
- ➤ Site Background
- Adit Discharge Characteristics
- > Streamlined Risk Evaluation
- Removal Action Goals and Objectives
- Screening and Development of Alternatives
- Detailed Analysis of Alternatives
- Comparative Analysis of Alternatives

The EE/CA will contain figures and tables summarizing supporting information and will have appendices of laboratory analytical data and cost estimates. The EE/CA will be prepared in accordance with EPA guidance for preparing non-time-critical removal actions (EPA, 1993). Responses to significant comments on the draft EE/CA will be provided in a separate submittal or will be incorporated into the final EE/CA.

Depending on the outcome of the Adit Discharge EE/CA, other EE/CAs may be needed to resolve issues that have not been addressed in the District. The scope of any future EE/CAs will be detailed in an annual work plan.

3.12 GROUT EXPLORATION BOREHOLES IN THE GOLD DUST ADIT

Assessment work in the Gold Dust Adit in 2003 identified several exploration boreholes within the underground workings that are leaking measurable quantities of water into the adit. These boreholes are currently sealed with packers. Grouting equipment will be present at the Glengarry Adit in 2004 as part of Phase II construction, allowing the use of the on-site contractor to complete this work in 2004 if time allows.

Grouting would consist of removing the existing packers, staging grouting equipment outside the portal, and pumping grout through a packer placed in the boreholes. Monitoring will be performed following grouting to determine the effectiveness of the grout closure in reducing or eliminating flow from the boreholes. Monitoring will consist of measuring flow from the boreholes on several occasions in 2004.

3.13 CHARACTERIZE THE DISTRIBUTION OF SEDIMENT IN FISHER AND DAISY CREEKS

Fine-grained sediments present in Fisher and Daisy creeks will be characterized to document metals concentrations and distribution. Potential removal of metals-contaminated sediments in Fisher and Daisy creeks was discussed in detail by the Natural Resources Working Group during meetings conducted in 2002 and 2003. For natural resources restoration, the group agreed that only hazardous substances on District Property would by considered for restoration work until a Notice of District Property work completion was received. The group also questioned the practicality of removing streambed sediments in light of potential deleterious consequences and the potential for recontamination.

Because any potential cleanup of streambed sediments would require a coordinated effort on both District and non-District Property, a sediment cleanup action can not be considered until a Notice of District Property work completion is received. However, assessment of the degree and extent of metals in sediment is necessary for future consideration of alternatives that may address sediment contamination. Existing data on sediment characteristics is limited to a very few samples collected in the early 1990's.

Characterization will involve a systematic, longitudinal traverse of each stream. The study area for sediment distribution will include the headwaters at Lulu and Daisy passes to the confluence with Lady of the Lake Creek (Fisher Creek traverse) and the upper end of the Stillwater marsh (Daisy Creek traverse). A field scientist will field map the stream and any sediment deposits at a scale of one-inch to 100 feet or other appropriate scale. Observations will be made on typical width, gradient, bed material type, and occurrence and character of fine-grained sediment. About seven miles of stream will be traversed.

Samples of sediment will be collected at 1,000 foot intervals along each traverse. Sediment samples will be collected as grab samples from the streambed in accordance with the procedures described in the Site-Wide SAP (Maxim, 1999f) and analyzed for total arsenic, cadmium, chromium, copper, lead, mercury, silver, and zinc (Table 4-8, Site-Wide SAP). Sample sites will be located using a resource-grade global positioning system (GPS) if satellite coverage is available, or by plotting locations on aerial photography. (The USDA-FS has aerial photography that was flown for the project in 1999.)

3.14 FERRICRETE STUDY

This is the third year of data collection for this study, which is an extension of previous work completed by George Furniss in the late 1990's. A detailed study plan was included in the 2002/2003 Work Plan listing the methods and approach for the study. In 2004, water quality and precipitate samples will be collected at previously established sampling locations on both Fisher and Daisy creeks (approximately 30 locations). Two detailed field pH surveys will be conducted on the streams when precipitate samplers are installed and when they are removed.

The modern iron oxyhydroxides that are currently forming in the streams will be collected in perforated plastic bottles filled with inert glass beads. Samplers will be submerged in the stream and allowed to accumulate precipitates over a period of approximately 4 to 5 weeks during base flow and the iron oxyhydroxide precipitates sieved to minus 200 mesh. Energy Laboratories (Billings, Montana) will analyze the samples for total sulfur and for iron, aluminum, copper, and zinc by EPA Method 3050 (EPA, 1987). The resulting sample digests will be analyzed using inductively coupled plasma emission spectrophotometry. Surface water samples will be collected and analyzed using standard sampling procedures and analysis methods. Approximately 10% of samples will be collected in duplicate to establish variability. To ensure the quality of the resulting data, EPA and U.S. Geological Survey standards, laboratory duplicates, and spike recovery techniques will be used.

Following evaluation of data collected in 2004, the study may continue in 2005. Any additional work on the study will be detailed in the 2005/2006 Work Plan.

3.15 GRIZZLY BEAR STUDY

This project involves recording bear sign along about 72.4 kilometers (45 miles) of permanent, randomly placed belt transects each year over a two year period. This is the second year of the two year data collection effort. The intent of the study is to assess the effects of New World Mine reclamation

project on bear distribution and habitat use. Crews will walk all transects each month in July, August, September, and October. Scat samples will be analyzed for species identification using DNA analysis. These samples will also be analyzed to determine diet by Kevin Frey (Montana Department of Fish, Wildlife, and Parks).

To determine human use levels in the Basin, traffic patterns will be monitored (numbers, type, and time) on Fisher Creek, Miller Creek, and Highway 212. The data will be organized and displayed in a spreadsheet. Dr. Lynn Irby, Ecology Department of Montana State University will summarize and analyze the data.

3.16 STILLWATER WETLAND THESIS

Through Montana State University, a Master's Thesis is being undertaken at the Stillwater wetland. The main objective of this thesis is to characterize metal concentrations in wetland sediments and shallow groundwater and to determine if these concentrations are elevated due to mining activities in the Daisy Creek drainage. In addition to determining premining levels of metals in these media, this study will also attempt to quantify the extent and timing of metal deposition in the Stillwater wetland and determine if the Stillwater wetland contributes to metals loading in the Stillwater River.

During the 2003 field season, the Stillwater wetland site was surveyed, mapped using geomorphic characteristics, and sampled. Sampling involved collecting 70 soil samples and installing five monitoring wells and 10 piezometers. Soil samples have been processed and analyzed using an X-ray Flouresence instrument to determine metals levels. Additionally, these same samples will be processed and tested in the laboratory according to EPA Method 3050B for total metals content. Based on these results, additionally soil sampling may be conducted and additional wells may be installed in 2005. All data will be analyzed and presented in a Master's Thesis in 2005.

3.17 INITIATE THE NATIONAL HISTORIC REGISTER NOMINATION PROCESS FOR THE DISTRICT

A Programmatic Agreement with Montana State Historic Preservation Office (SHPO) and the Advisory Council was developed at the beginning of the New World Project. The concluding accomplishment in this Agreement was to nominate the New World Historic Mining District to the National Register of Historic Places. This year the nomination information will be compiled. It will include the history of the District, a statement of significance, recording of the individual sites, characterizing the landscape and establishing boundaries. This nomination process will be the culmination of work from the 1990's, as well as inventories and mitigation reports completed as part of the New World Project over the past few years.

3.18 PREPARE 2005/2006 WORK PLAN

A work plan similar to this plan will be prepared to guide specific work activities to be completed during 2005/2006. These activities will complement those performed under the long-term plans and will involve surface water, groundwater, and revegetation monitoring, construction monitoring, and construction activities.

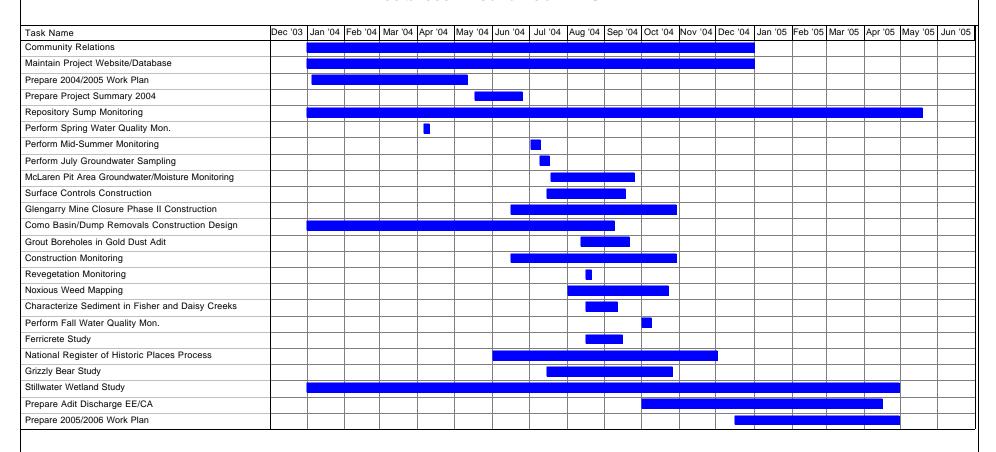
4.0 PROJECT SCHEDULE

Figure 6 illustrates the schedule for 2004/2005 activities.

5.0 REPORTS

Project documents will be prepared during 2004/2005 for many of the items discussed in Section 3.0. These documents are summarized in **Table 12** along with a description of the document contents and approximate delivery schedule.

FIGURE 6 NEW WORLD MINING DISTRICT RESPONSE AND RESTORATION PROJECT 2004/2005 PROJECT SCHEDULE



NewWorld_2004_SCHED.mpp

TABLE 12 PROJECT DOCUMENT LIST 2004/2005 Work Plan **Deliverable Title** Contents **Delivery Schedule** Draft - May 2004 2004/2005 Work Plan This Document Final - June 2004 Summary document of project activities Project Summary 2004 June 2004 completed since 1999 Construction bid package for the preferred Como Basin/Repository Expansion Construction alternative for cleanup of the Como Basin and September 2004 Design removal of the Fisher and Miller Creek dumps Technical Memorandum – Repository Sump Results of repository sump monitoring July 2004 Monitoring Technical Memorandum – Reclamation Reclamation monitoring results December 2004 Monitoring Results of sediment distribution and Technical Memorandum – Sediment Distribution February 2005 characterization assessment in Fisher and and Characteristics Daisy Creeks 2004 Surface Water and Groundwater Results and analyses of ongoing surface water, January 2005 groundwater, and moisture monitoring Monitoring Report Adit Discharge Engineering Evaluation/Cost Draft – March 2005 Engineering evaluation of alternatives Analysis developed for Adit Discharges Final – June 2005 Draft – April 2005 2005/2006 Work Plan Proposed activities for 2005/2006 Final – May 2005

Note: Documents listed in this table are the primary documents that will be completed by spring 2005 for the tasks listed. Documents for remaining tasks will be listed in the 2005/2006 Work Plan.

This page intentionally left blank.

6.0 REFERENCES

- EPA, 1993. Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA. EPA/540-R-93-057. Publication 9360.0-32. Office of Emergency and Remedial Response. Washington D.C. August.
- EPA, 1986. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846.
- Hach Company, 1991. DR/2000 Spectrophotometer Procedures Manual.
- Maxim Technologies, 2004. Miller Creek Response Action Engineering Evaluation/Cost Analysis. New World Mining District Response and Restoration Project. Final. Prepared for the USDA Forest Service. January.
- Maxim Technologies, 2003a. 2003/2004 Work Plan. New World Mining District Response and Restoration Project. Final. Prepared for the USDA Forest Service. May.
- Maxim Technologies, 2003b. Project Summary 2003. New World Mining District Response and Restoration Project. Final. Prepared for the USDA Forest Service. June.
- Maxim Technologies, Inc., 2003c. Revised Support Document and Implementation Plan for Temporary Water Quality Standards. New World Mining District Response and Restoration Project. Prepared for USDA Forest Service, Northern Region. May 20.
- Maxim Technologies, 2002a. 2002/2003 Work Plan. New World Mining District Response and Restoration Project. Final. Prepared for the USDA Forest Service. July 22.
- Maxim Technologies, 2002b. Project Summary 2002. New World Mining District Response and Restoration Project. Final. Prepared for the USDA Forest Service. June.
- Maxim Technologies, 2002c. Progress Report, Temporary Water Quality Standards, 3-Year Review, New World Mining District Response and Restoration Project. Prepared for the USDA Forest Service. April 15.
- Maxim Technologies, 2002d. Como Basin/Glengarry Adit/Fisher Creek Engineering Evaluation/Cost Analysis. New World Mining District Response and Restoration Project. Final. Prepared for the USDA Forest Service. June.
- Maxim Technologies, 2002e. Technical Memorandum, Soil Sampling Results, Gallatin National Forest Land Adjacent to the Great Republic Smelter Site. New World Mining District Response and Restoration Project. Prepared for the USDA Forest Service. December 24.
- Maxim Technologies, 2001a. 2001 Work Plan. New World Mining District Response and Restoration Project. Final. Prepared for the USDA Forest Service. June 25.
- Maxim Technologies, 2001b. Project Summary 2001. New World Mining District Response and Restoration Project. Final. Prepared for the USDA Forest Service, August.

- Maxim Technologies, 2001c. McLaren Pit Response Action Engineering Evaluation/Cost Analysis. New World Mining District Response and Restoration Project. Final. Prepared for the USDA Forest Service. December.
- Maxim Technologies, 2000. 2000 Work Plan. New World Mining District Response and Restoration Project. Final. Prepared for the USDA Forest Service, March 10.
- Maxim Technologies, 1999a. Overall Project Work Plan. New World Mining District Response and Restoration Project. Final. Prepared for the USDA Forest Service, November 10.
- Maxim Technologies, 1999b. 1999 Work Plan. New World Mining District Response and Restoration Project. Final. Prepared for the USDA Forest Service, November 10.
- Maxim Technologies, 1999c. Community Relations Plan. New World Mining District Response and Restoration Project. Appendix C of the Overall Project Work Plan. Final. Prepared for the USDA Forest Service. November 10.
- Maxim Technologies, 1999d. Long-Term Surface Water Quality Monitoring Plan. New World Mining District Response and Restoration Project. Appendix D of the Overall Project Work Plan. Final. Prepared for the USDA Forest Service, November 10.
- Maxim Technologies, 1999e. Long-Term Revegetation Monitoring Plan. New World Mining District Response and Restoration Project. Appendix E of the Overall Project Work Plan. Final. Prepared for the USDA Forest Service, November 10.
- Maxim Technologies, 1999f. Site-Wide Sampling and Analysis Plan. New World Mining District Response and Restoration Project. Appendix B of the Overall Project Work Plan. Final. Prepared for the USDA Forest Service, November 10.
- Montana Department of Environmental Quality (MDEQ). 2002. Circular WQB-7 Montana Numeric Water Quality Standards, Planning, Prevention and Assistance Division, Standards and Economic Analysis Section, January.
- Stanley, D., and Maxim Technologies, Inc., 1998. Support Document and Implementation Plan. Submitted by Crown Butte Mines, Inc. in Support of Its Petition for Temporary Modification of Water Quality Standards for Selected Parameters for Fisher and Daisy Creeks and a Headwater Segment of the Stillwater River, Park County, Montana.